ITS Field Operational Test Summary
GENESIS

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Introduction

The Genesis ITS Field Operational Test demonstrated the use of alphanumeric personal communications devices (pagers) and personal digital assistants (PDAs) to provide traffic information in the Twin Cities Metropolitan area of Minnesota. The project began in 1992 as part of a Minnesota Department of Transportation program to reduce congestion in the Twin Cities area. This test was the second of a group of three Minnesota Guidestar tests that shared traffic information from the Minnesota Department of Transportation (MnDOT) Traffic Management Center (TMC) in downtown Minneapolis.

The test assessed whether individual users can realize benefits from receiving real-time traffic information. The test was also introduced MnDOT to ITS technologies and broke new ground in ITS public/private partnerships.

The operational testing phase began in mid 1995 and finished in January 1996. The Final Evaluation Report was released in September 1997.

Project Description

The project team recruited 492 individuals to participate in the test, including 210 existing pager users and 239 new users. MnDOT collected and made available traffic information regarding incidents, congestion, and other delay conditions such as road construction. The test participants were trained in the use of the pagers and PDAs to access the traffic information provided by MnDOT. Figure 1 shows the Genesis test coverage area.

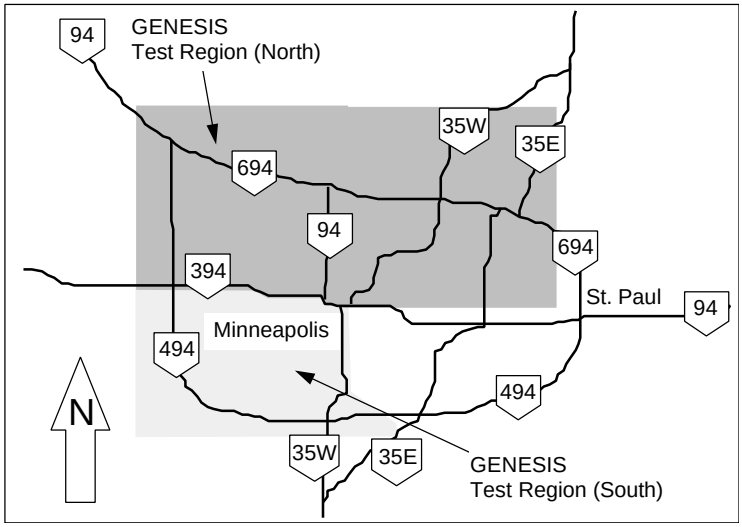

Figure 1. Genesis Test Coveragle Area

The evaluation was composed of five individual supporting tests:

1. System effectiveness—analysis of origin-destination (O-D) data to determine changes in behavior and time or distance savings
2. User perception—assessment of user perception of Genesis features
3. Institutional issues—examination of technical and deployment issues
4. Modeling—an extrapolation of the system effectiveness data focused on a single expressway corridor
5. Human factors—research into workload impacts on drivers using the system.

Results

Due to technical problems the use of PDAs was extremely limited, and the preponderance of available data came from pager users. The results from the surveys and focus groups were encouraging.

From the System Effectiveness Test, 65 percent of surveyed participants reported they used the Genesis capability every day. For 52 percent, Genesis was the primary means of obtaining traffic information. The most frequent response to incident information was to take an alternate route. The results showed that those who learned about an incident through Genesis were much less likely drive through the incident (12 percent) than those who learned about it through other means (radio, television, etc. – 42 percent). Travel times were not reduced to a statistically significant level through the use of Genesis, and congestion and travel times increased on both primary and alternative routes when incidents were reported.

From the User Perception Test, overall ratings of the usefulness of the traffic information were positive. Users noted some limitations in the system, particularly with regard to the level of detail provided.

The results of the Institutional Issues Test emphasized a need for proper financial planning for ITS projects. The results also showed a need for understanding the full range of technical obstacles, primarily with regard to system integration. The results pointed out the need for better communications from both inter- and an intra-organizational perspectives.

The Modeling Test showed that the use of personal communications devices (PCDs) can reduce average travel time by up to 15 percent if the devices achieve a 20 percent level of market penetration. As the level of congestion increases the travel time savings benefits of using PCDs increase up to a point. Results from the Modeling Test conflicted with the results from the System Effectiveness test. Evaluators attributed this conflict to the limitations of the model.

The Human Factors Test concluded that using PCDs divert driver's attention from their driving. The test found, however, that there was no evidence of this causing a safety hazard. Users noted some deficiencies in message legibility and content which can be remedied.

Legacy

The project discontinued operations upon completion of the test. There were no plans to further deploy the system as configured for the test. MnDOT has indicated that they are interested in providing this type of information to a third-party as a value added reseller.

Test Partners

- Federal Highway Administration (FHWA)
- MinnComm
- Minnesota Department of Transportation (DOT)

References

Genesis Final Evaluation Report, Booz·Allen & Hamilton Inc., September 1997.